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**RESEARCH
REPORT**

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**FINDINGS FROM THE 2014 DATA & ANALYTICS GLOBAL
EXECUTIVE STUDY AND RESEARCH PROJECT**

The Talent Dividend

Analytics talent is driving competitive
advantage at data-oriented companies.

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The Talent Dividend

Committing to Analytics

In 1974, Colleen Roberts went straight from high school into nursing. In the early 1990s, she went back for a bachelor's degree in nursing just as her employer, Intermountain Healthcare, based in Salt Lake City, Utah, began actively using data to help shape patient care.

At the time, she noticed that data was beginning to change behaviors — and improve patient outcomes. She also noticed she liked working with the data. “I was interested in it, and it was challenging, and I obviously like the challenge,” she says. She had always intended to get more education, and a divorce further motivated her. She also found that the demands of bedside nursing were wearing on her over time. So in 1998, at the age of 42, she started work towards a master's degree in clinical informatics at the University of Utah. She felt out of place — she was neither young nor a programmer. But she knew how clinicians worked, and she knew how to apply the data. She got her master's in 2002, and became a data manager for the cardiovascular clinical program at Intermountain.

As a data manager, “my biggest job was facilitating between people who talk clinical and people who talk information systems,” Roberts says. “They need help translating.” She was a particularly effective translator, because on the IT side, she could explain the process challenges doctors and nurses faced while caring for patients. And when talking to doctors and nurses, “when I mentioned I had been a bedside nurse for 25 years, I suddenly gained their respect and their willingness to listen to what I had to say. I wasn't just an IT person who didn't understand their world.”

Over the years, Roberts' data skills and business sense have won her other job offers, but in the end she's stayed with Intermountain. She felt loyal to the company that paid tuition for her bachelor's and master's degrees (100% for the former, 70% for the latter). She's had plenty of career opportunities, including being promoted to operations manager of the cardiovascular clinical program. And most of all, the now-58-year-old loves the impact of her work. “I love patient care, and I'm still improving patient care, only now it's across whole patient populations. Data changes behavior.”

Indeed, companies that successfully combine analytics skills with existing business knowledge are more likely to create a competitive advantage with data. This is one of the key findings from the fifth annual *MIT Sloan Management Review* survey on data analytics, the third done in conjunction with SAS Institute. (See “About the Research,” p. 11.) Based on a survey of 2,719 respondents from across the globe and interviews with 28 executives and thought leaders, the study finds that organizations achieving the greatest benefits from analytics are also much more likely to have a plan for building their talent bench. That talent plan includes:

1. Giving preference to people with analytical skills when hiring and promoting
2. Developing analytical skills through formal training
3. Integrating new talent with more traditional data workers

From Technology to Talent

Companies today have more access to useful and cheaper data than ever before, but their ability to generate business value from data is showing signs of strain. More is not always better. (See “Increase in Data, Not Insights.”) Even with increases in useful data over the past two years, our survey suggests that companies might be getting less effective at using analytical insights to guide strategy, despite continued increases in investments in analytics technology.¹ This suggests that managers are struggling to handle increasing flows of data.

In addition, the percent of organizations reporting competitive advantage from analytics is on the decline. (See “Competitive Advantage From Analytics Declines.”) One reason for this trend is discussed in the 2014 MIT Sloan Management Review / SAS report *The Analytics Mandate*²: as more companies compete with analytics, it becomes more difficult to gain or maintain an edge with analytics.

It’s not simply that the competitive environment is shifting as more organizations become data savvy. Instead, deriving business value from analytics depends in important ways on building strong *internal capabilities* that link insights with business outcomes. Half of the survey respondents (50%) cite turning analytical insights into business actions as one of their top analytics challenges. Difficulty managing the vast amounts of ever-increasing data from multiple sources is also an issue. And four in ten (43%) companies report their lack of appropriate analytical skills as a key challenge.

For instance, Mathew Chacko, an IT executive at Coca-Cola, described his company’s need to transform a gap in data skills into an organizational capability:

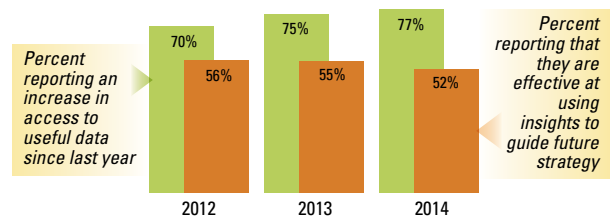
“We need people who are interested in data discovery — really willing to work with messy data and different sets of data — to find insights and create recommendation engines or predictor models that can have a life of their own. I would love to have that capability within the organization.”

Here’s another example. In 2013, General Mills — the \$17.9 billion food conglomerate with such brands as Cheerios, Yoplait and Green Giant — recognized that it was relying too much on outside data and research to understand its customers. In response, the company’s Consumer Insights group hired data scientist Wayde Fleener to improve how the organization uses its own customer information. According to Fleener, “When I started, our information about customers was buried in specialized functions. We needed someone to figure out what we really knew about our customers and develop some insights that could help us better serve them.”

The experiences of Coca-Cola and General Mills illustrate how some companies have access to a bounty of useful data, but may not have all the talent they need to capitalize on their data assets. Technology is no longer the main barrier to creating business value from data: the bigger barrier is a shortage of appropriate skills. Companies with appropriate analytical skills are far more likely to say that

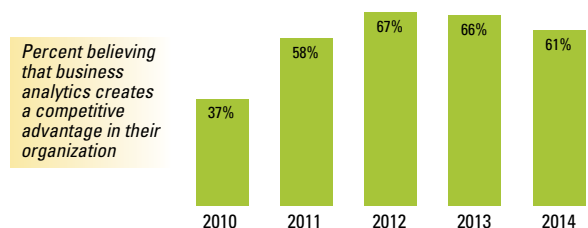
INCREASE IN DATA, NOT INSIGHTS

Access to useful data has steadily risen, but companies are less effective at applying insights to strategy.



COMPETITIVE ADVANTAGE FROM ANALYTICS DECLINES

After two years of significant increases from 2010 to 2012, competitive advantage from analytics has reached a turning point.



Top Three Analytics Challenges



Turning analytical insights into business actions



Difficulty aggregating multiple data sources



Lack of appropriate analytical skills

analytics is creating a competitive advantage in their organization than are other organizations. (See “Analytical Talent Fuels Competitive Advantage.”)

With the emergence of big data capabilities, the meaning of “appropriate analytical talent” covers a lot of ground. The range of analytics skills, roles and titles within organizations has broadened in recent years: today, there are not only analysts, but also data stewards and data scientists. What’s more, new executive roles, such as chief data officers, chief analytics officers and chief medical information officers, have emerged to ensure that analytical insights can be applied to strategic business issues. A less heralded group, decision makers — the end-users — are also developing analytics skills, as more companies make an effort to ensure that executives are better equipped to apply analytical insights to business issues.³ This report focuses on analysts and data scientists, the front line in corporate efforts to create valuable analytical insights.

The Talent Premium

With more companies on the path to develop value from analytics, demand for analytics talent has increased. The resulting pressure on the analytics labor pool has placed a premium on analytics talent. The McKinsey Global Institute estimates that by 2018, the U.S. economy will have a shortage of 140,000 to 190,000 people with analytical expertise and a shortfall of another 1.5 million managers and analysts with the skills to understand and make decisions.⁴

Hal Varian, chief economist at Google, describes the competition for skilled data workers:

“So now you’ve got the data available in some data warehouse configuration, and then the question is, how do I access it? How do I input it in decisions? How do I utilize that data effectively? That’s where people are now. They say, ‘Let’s go hire a data scientist or some statisticians. Let’s go hire some data engineers.’ And they find out everybody else is trying to hire the same people.”

Recognizing these demands, colleges and universities are creating master’s programs to help individuals develop analytical skills. More than 70 master’s degree programs in analytics and data science now exist, and the number has grown rapidly since 2007. North Carolina State University is home to one of the earliest programs. Program director Michael Rappa says the program just expanded to 80 students and will have between 120 and 150 students per class in the next two years.

The increasing demand for analytics talent is already having an effect on graduates from Rappa’s NC State program, who each received three and a half offers, on average, in 2014. The highly competitive marketplace allows newly minted analytics talent to be selective. In the battle for analytical resources, traditional companies may find themselves at a recruiting disadvantage relative to start-ups or companies founded by digital natives using new technologies to innovate and to disrupt stagnant industries.

Until supply meets demand, many organizations will continue to find it difficult to attract and retain the talent they need to build competitive advantage. In fact, four in ten survey respondents report difficulty attracting people with analytical skills, and an equal percent struggle to retain them. Surprisingly, many companies have yet to develop an effective talent strategy; they are not doing anything different to attract new data workers. Only one in five organizations has changed its approach to attracting and retaining analytics talent.

ANALYTICAL TALENT FUELS COMPETITIVE ADVANTAGE

Companies that have the appropriate analytical skills to make good use of data are much more likely to see competitive advantage.



Analytical Maturity Changes the Talent Equation

In previous reports in this research series, we used a maturity model to segment organizations into three groups: Analytically Challenged, Analytical Practitioners and Analytical Innovators. These segments were based on the extent to which survey respondents reported that their companies used analytics to innovate and gain a competitive advantage. (See “Three Levels of Analytics Maturity” for details about the segments.) Since these segments are defined based on the ultimate value they derive from analytics, it’s not surprising that there are stark differences in how they approach analytical talent.

Talent is essential to analytical maturity.

The importance of talent is again illustrated in its relationship to analytical maturity. Talent is clearly a key driver in innovating and gaining a competitive advantage with analytics. Analytical Innovators are more than four times more likely than the Analytically Challenged to believe they have the right talent in place. (See “Talent is Core to Analytical Success,” p. 6.)

That said, even within the Analytical Innovator group, there is still opportunity for stepping up analytical skills. One in four Analytical Innovators reports not being comfortable with their current talent bench. To innovate and maintain their competitive positions, Analytical Innovators must continue to evolve their analytics strategy and ramp up the sophistication of techniques. As the complexity of analytics increases, more sophisticated expertise is required.

Analytical Innovators have a tight grip on the talent market. First, Analytical Innovators have significantly less difficulty attracting and retaining talent. (See “Talent Can Be Difficult to Acquire and Keep,” see p. 6.) On the surface, it makes sense that the analytically-minded want to go where the analytical action is. Workplaces of choice have little trouble attracting high-caliber employees, and often they can be very selective from among the scarce resources available. While only 34% of the

Three Levels of Analytical Maturity

We classify organizational analytical maturity based on a company’s ability to gain competitive advantage from analytics and its ability to use analytics to innovate. (See last year’s report, *The Analytics Mandate*, for details.)

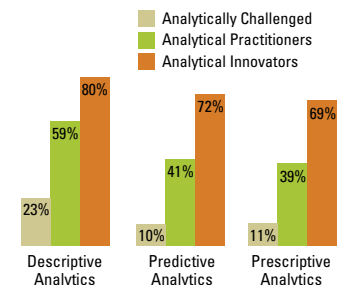
34%	54%	12%
Analytically Challenged	Analytical Practitioners	Analytical Innovators
Rely more on management experience than data analysis	Working to become more data driven	Analytics culture driven by senior mandate
Focus on cost reduction in use of analytics	Primarily operational in their application of analytics	More strategic in their application of analytics
Suffer from data quality and access issues	Have “just good enough” data	Place a high value on data
Lack appropriate data management and analytical skills	Have more of the information they need to make decisions	Have higher levels of data management and analytic skills
Simple approach to analytics, mostly descriptive applications	More complex approach to analytics, some predictive applications	Sophisticated approach to analytics, focus on prediction and prescription

Organizations differ considerably by maturity level. Analytical Innovators embrace progressive approaches. Companies use **descriptive analytics** to look at what happened in the past and why, **predictive analytics** to model what will happen, and **prescriptive analytics** to develop multiple scenarios about the future. In the case of prescriptive and predictive analytics, Analytical Innovators display substantial advantages over Analytical Practitioners and especially over Analytically Challenged organizations. The gap is narrower for descriptive analytics.

MATURITY AND TYPES OF ANALYTICS

Analytical Innovators embrace progressive approaches; they are seven times as likely to employ predictive analytics and six times as likely to employ prescriptive analytics relative to Analytically Challenged organizations.

Percent indicating their organization is somewhat effective or very effective at using each type of analytics

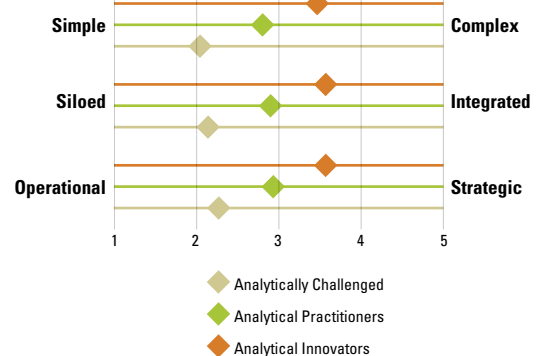


Additionally, Analytical Innovators apply relatively complex models to strategic problems in integrated ways.

MATURITY AND ANALYTICAL RESULTS

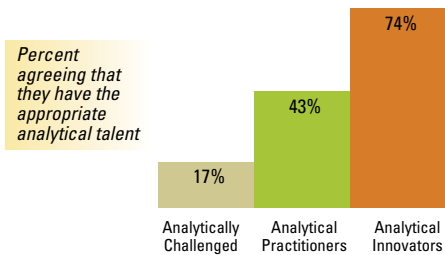
Analytical Innovators apply relatively complex, integrated models to strategic problems.

“Where is your organization in its use of analytics relative to the following?”



TALENT IS CORE TO ANALYTICAL SUCCESS

Analytical maturity is strongly associated with having appropriate talent.



Analytical Innovators report that they employ different recruiting methods for analytics talent (vs. 17% among the Analytically Challenged), even bigger differences emerge when comparing their approaches to other types of hiring practices.

Resourcing analytical skills varies by maturity level. Organizations of all maturity levels rely heavily on training on the job to meet analytical skill needs. And while hiring is also a significant source of talent, the Analytical Innovators are more aggressive in tapping talent coming out of universities compared to the other companies, who are more likely to hire from other organizations.

Graduates of analytics programs are more likely to be attracted to places that are using sophisticated techniques. Indeed, nearly half of the Analytical Innovators have people in data scientist or similar roles, nearly three times the level in Analytically Challenged organizations. In addition, the Analytical Innovators have an edge in poaching talent from

other businesses. Conversely, the Analytically Challenged group is most likely to rely on outsourcing their analytical activities. In fact, the percent of Analytically Challenged companies that outsource analytical activities to individuals is greater than the percent that hire from universities. (See “Companies Seek Analytical Skills From a Variety of Sources,” p. 7.)

Analytical Innovators approach talent with a different mindset.

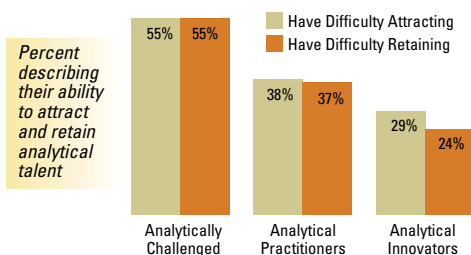
Arguably the most notable difference between analytically mature organizations and others is their overt focus on cultivating and rewarding analytical talent. Almost two-thirds of Analytical Innovators give hiring and promotional preference to those with analytical capabilities. Contrast this with the just 13% of Analytically Challenged companies that report this preference. (See “Preference for Analytical Skills is a Key Differentiator,” p. 7.)

Successful integration of the new breed of talent helps drive success.

Once analytics talent is acquired, new hires must be integrated with the established data workers, who often don’t speak the same language about data and business. The integration success rate among Analytical Innovators is three times that of the Analytically Challenged. (See “Integrating Talent Poses Challenges,” p. 7.) However, even though analytically mature companies do a better job at integrating new analytics workers into their organizations, there is still significant room for improvement: one in two Analytical Innovators reports difficulty with this talent transition.

TALENT CAN BE DIFFICULT TO ACQUIRE AND KEEP

Analytical talent is tough to get and retain, particularly for the organizations that need it most.

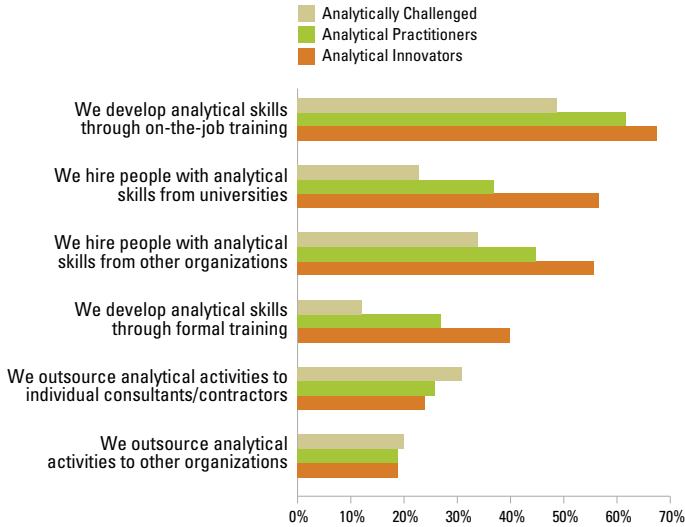


A Guide to Building Your Talent Bench

Having the right talent in place can lead to dramatic outcomes. At the XL Group (XL), a global insurance company based in Ireland, executives wanted to develop advanced analytical tools for its underwriters who have to make risk decisions and price policies before they know the costs. XL formed a team led by Kimberly Holmes, an actuary, to develop and implement predictive, multi-variant

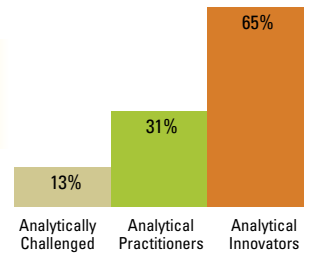
COMPANIES SEEK ANALYTICAL SKILLS FROM A VARIETY OF SOURCES
Analytically mature organizations are more aggressive than others in hiring outside talent.

“How is your organization getting the analytical skills it needs?”



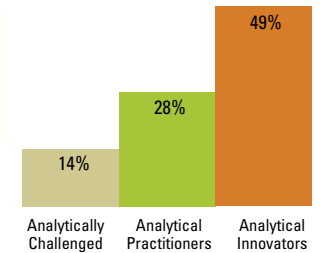
PREFERENCE FOR ANALYTICAL SKILLS IS A KEY DIFFERENTIATOR
Analytical maturity is reflected in hiring and promotion practices.

Percent who give preference towards people with analytical skills



INTEGRATING TALENT POSES CHALLENGES
Analytical Innovators are three times as likely to successfully integrate new with existing talent.

Percent who are successfully integrating analytics talent and traditional data workers



analytics, using internal and external data. After four years, XL has seen its claims per dollar of premium written fall significantly in those businesses which were early adopters of predictive models. That’s a significant source of recurring profits. The profits come from having a new, proprietary way to identify risks. “Risk selection is the main driver of profitability for us,” said Holmes, now senior vice president of strategic analytics at XL Group. “We will outperform our competition just knowing what to write more of, what to write less of.”

Building a skilled talent bench that can generate such valuable results depends on a combination of hiring and training. Some data workers are more likely to be new hires. For instance, data scientists, who “tend to be better programmers than most statisticians and better statisticians than most programmers”⁵ according to an article by Jeanne G. Harris, of Accenture Institute of High Performance, and professor Vijay Mehrotra, from the University of San Francisco, may be difficult to develop from

existing talent if a company is starting with a shallow talent bench. Organizations with data scientists tend to signal a stronger commitment to analytics compared to organizations that have no data scientist role. (See “Data Scientist Role Signals Commitment to Analytics,” p. 8.) Demonstrating an analytics focus can help attract and retain data scientists, who have plenty of employment opportunities and can be difficult to recruit.

At General Mills, its Consumer Insights unit lures data scientist candidates by pitching them the opportunity to be a pioneer. “They’re tough to acquire. The big sell is, ‘we’re starting something here at General Mills, you could be part of it.’ That’s appealing to certain individuals,” says company data scientist Fleener, who recently used the pioneer pitch to lure someone from a large bank.

But it isn’t easy. Recruiters like Tuck Rickards of Russell Reynolds say that talent can be drawn to companies where they can make a difference, but they

don't want to go someplace where they are likely to be frustrated in their efforts. Companies that traditionally have not given much weight to analytics may lack the intangibles that draw top analytics talent.

In 2013, Amadeus IT Group — a Spain-based provider of back-end services to airlines and travel e-commerce sites — formed a new analytics division, Travel Intelligence, to create revenue from analytics. The company wanted to hire 40 data scientists to work with customers and create new products. It was able to train 20 of its existing employees, but still needed another 20, a daunting task for most companies.

Amadeus did have some advantages in hiring — it was offering people a chance to build a brand new unit, and they could work in pleasant climates in world-class cities like Madrid. The job also promised excellent travel opportunities, since Amadeus does business in much of the world. Amadeus also benefited from a difficult market for PhDs in Europe, where stagnant economies were stifling opportunities for academic researchers. The company drew more than 300 applications, including operations research specialists from other industries, and PhDs in fields like biology, in addition to statistics and mathematics. One hire was a physicist at the European Space Agency, who went from putting things into orbit to studying personalization techniques. The company ended up interviewing 100 candidates. It lost some to other companies, like Amazon.com and eBay. But it was able to get 20 people that it felt were top-notch.

On occasion, companies can supplement their own analytics capabilities by outsourcing non-strategic

tasks. Outsourcing can offer a useful patch for organizations that need to catch up or are missing specific skills. General Mills opted for outsourcing a specific skill, data visualization, that it felt was a commodity. Through selective outsourcing, it gained four full-time equivalents for much less money than it would cost to hire locally, and was able to reallocate the bulk of its analytics dollars to hiring data scientists.

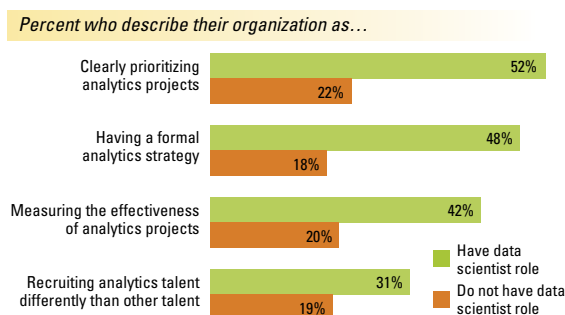
But outsourcing is about more than money. At DBS Bank in Singapore, David Gledhill, a managing director, says that outsourcing can fill in knowledge gaps. “As analytics is developing so quickly, no one firm has all the right answers,” Gledhill says. “To assume we’d get all the right answers just by hiring internally I think is naïve.” DBS mixes and matches analytics vendors, and even pits them against one another. “We’ll ‘bake off’ different vendors against each other and look at model performance, to see how much uplift — how much of a ‘hit’ did we get — to score how these different vendors are doing,” Gledhill says.⁶

However, companies also need analytically savvy people who intimately understand their business and their culture. Colleen Roberts’s story from Intermountain Healthcare offers a classic example of how knowing the business and being able to communicate across the divide that often exists between IT and service delivery departments can be critical to creating business value with analytics. It is no wonder that Intermountain supported her education and promoted her into positions of greater responsibility, just as it’s no surprise that, in Amadeus’s case, the company nurtured 20 of its own data workers to fill positions in its new business division.

There is far more to the talent equation than the acquisition of skilled data workers. The following four recommendations can help companies develop a talent strategy to foster competitive advantage with data and analytics.

Look inside to tap internal talent. A high percentage of companies (63%) are turning to their own backyards to beef up their analytical skills through formal or on-the-job training. One big plus

DATA SCIENTIST ROLE SIGNALS COMMITMENT TO ANALYTICS
Organizations with a data scientist role are more advanced in their analytics strategy.





Surprisingly, many companies have yet to develop an effective talent strategy; they are not doing anything different to attract new data workers.

of developing analytics skills among current employees is that they already know the business. That makes a big difference when communicating analytical insights to end-users, what some are calling the “last mile” problem in analytics. The phrase originally referred to the problem of getting connectivity from telecom and ISP endpoints over the “last mile” they travel to arrive in homes — a thorny bandwidth issue. In analytics, the last mile is making connections between the data and executives. To secure this connection, some companies, consultants and universities are training data analysts and data scientists in the art of storytelling.⁷

Some companies have created formal training programs to support the development of analytical skills. These programs serve at least four organizational purposes. The first is to deepen the company’s existing expertise in a given area. The second is to afford data workers the opportunity to improve their competency and expand their career prospects. The third is to build community among data workers. And the fourth is to signal a commitment to analytics that can help with recruitment. Survey respondents say that organizations with formal analytics training programs are twice as likely to be successful at attracting and integrating new talent as those without formal training programs.

One caveat: formal training may not work for all organizations. Analytically Challenged companies, for example, may need to hire outside talent first before they can build internally. For companies with little experience in analytics, an infusion of expertise may be needed to lead the way forward.

Focus on talent integration, not infusion.

Integrating new talent is a vital, but difficult, component of the efforts necessary to obtain value from new hires or even insourced workers. Yet only 27% of companies report that they successfully integrate new analytics talent with more traditional data workers. Infusing new analytics talent without proper support and guidance can alienate traditional data workers and undermine everyone’s contributions.

When Amadeus began building its Travel Intelligence unit, Denis Arnaud, the company’s applied research senior manager, made a point of hiring analytics people who liked to work with others, making it easier to form working teams with existing Amadeus staff. The company uses regular retreats to help the teams bond and to share knowledge. Arnaud also encourages them to develop relationships outside of the workplace. “Go play soccer with people, go out in the evening, sports, swimming, running, whatever, so they know each other and have the relationships and when they have a question on technical or functional details they can go and ask colleagues,” he says.

Creating relationships between data workers and end-users is also critical. “When I first got here, people felt threatened because I was coming into their role and questioning them,” General Mills’ Fleener says. “There was a lot of resistance and ‘are you trying to take over what I’m doing?’ I had to keep saying, ‘no, I’m just trying to help you do things better.’” Fleener says he had tensions with staffers in the information technology department who thought he was being brought in to tell them they’d been doing the wrong things. Over a six-month period of developing relationships and consistent meetings, Fleener says he was able to win over the IT staff, which now gives him invaluable support. By the end of 2014, the Consumer Insights unit at General Mills had three data scientists and more than 10 supporting staff, including visualizers and data stewards.

Set up a buddy system. Michael Rappa of North Carolina State says companies are approaching his analytics program with unrealistic lists of the skills they want to see in graduates. He says data scientists will excel at different aspects of the job. Some may be better at programming, others at statistics and others at the math underlying the algorithms. It’s important to build teams of complementary skills.

At Amadeus, data scientists were paired with field sales representatives to help focus their analytics efforts. At General Electric, data scientists work with

other roles and with GE's own traditional analysts to devise the algorithms driving GE's new Industrial Internet services business. Vince Campisi, the chief information officer for GE's Center of Software Excellence, says all these complementary positions have proven crucial. He cites these multiple roles as a key to the success of GE's airline monitoring application, which the company used to improve aircraft engine performance, helping airlines increase their revenue per engine.

Build a common core. Organizations across all maturity levels can benefit from enhancing their ability to consume analytical insights. Actually improving managers' abilities to understand, to trust and to act on analytical insights is one important step toward addressing the "last mile" problem in analytics. Formal training is one option, but other institutional initiatives can help. For example, establishing centers of excellence can showcase best practices, provide research and technical resources and offer support. One sign that companies are already trying to address this issue: our survey shows that organizations are doing more to train existing managers to become more analytical (49%) than to train analytics professionals to better understand their business (34%).

Another step toward improving consumption of analytics is to create a common language for assessing and using data. Remco Brouwer, director of business intelligence for Coca-Cola, says:

"A lot of big corporations suffer from having several flavors of data and multiple versions of the truth. I often say that if you look at the real setup of a company, it's often much more complex in reality than its own employees are willing and prepared to accept. Employees

often have a simple 3-dimensional model of the business model, where the reality is much more complex than that. There are so many ways that you can look at data, right? Is it for a business unit? Is it for a country? Is the country the same as a business unit? People mix up dimensions. Should I filter on geography or a legal entity? Is that the same thing? Will picking the other dimension get you to the exact same numbers?

So, the first thing is to align people on one set of truths. Do that and you can skip the first ten minutes of the meeting where people discuss the 'what' by comparing the numbers, is yours right or mine? If you have that under control, then you can move straight to the 'why' and the 'how', such as whether you've been successful or not and how to make a plan going forward. More often than not, you will need top management to help 'officialize' a certain way of looking at the data."

Conclusion

With the supply of analytics talent in the labor force slowly growing to meet demand, a majority of companies are looking within their own walls for solutions. While there is clearly a need for new graduates and data scientists who know the most cutting-edge techniques of analysis, there is just as much of a need for information workers like Colleen Roberts, who know both the business and technical sides of an organization. Current employees who are able to develop an analytics skillset and combine that with their knowledge of the business can be invaluable when moving analytical insights across the "last mile" to decision makers. For



Building a skilled talent bench that can generate valuable results depends on a combination of hiring and training.

About the Research

To understand the challenges and opportunities associated with the use of business analytics, *MIT Sloan Management Review* conducted its fifth annual survey of business executives, managers and analytics professionals from organizations located around the world. The survey, conducted in the fall of 2014 in partnership with SAS, captured insights from 2,719 respondents across the world, from a wide variety of industries and from organizations of all sizes. The sample was drawn from a number of sources, including MIT alumni, *MIT Sloan Management Review* subscribers, SAS clients and other interested parties.

In addition to these survey results, we interviewed subject-matter experts from a number of industries and disciplines to understand the practical issues facing organizations today in their use of analytics. Our interviewees' insights contributed to a richer understanding of the data. We also drew upon a number of case studies to illustrate how organizations are using business analytics as a strategic asset. Earlier results from the research appeared in the Spring 2015 issue of the *MIT Sloan Management Review*.

In this report, the term "analytics" refers to the use of data and related business insights developed through applied analytical disciplines (for example, statistical, contextual, quantitative, predictive, cognitive and other models) to drive fact-based planning, decisions, execution, management, measurement and learning.

companies that find it difficult to lure top talent, their analytics capability can make substantial advances by looking differently at their own existing talent.

Indeed, companies that are most successful with analytics have a very different approach to hiring, training, integrating and promoting data workers than other organizations. They are pursuing many paths simultaneously to build and maintain a strong corporate analytics skillset.

Taken together, the human resource practices of analytically mature companies have all the hallmarks of a plan. Companies that are less successful with analytics tend not to have a plan; their approach to analytics talent is scattered and inconsistent compared to more data-oriented companies. But without a robust human resource plan for analytics, efforts to develop a corporate capability around analytics will inevitably fall short. The question for all companies concerned with building their analytics capabilities is this: What is your plan for cultivating analytics talent?

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